Claims

1. A method of pretreating of pulp to be bleached by acidification, in which the bleachability of the pulp is improved, **characterized** by

a) adjusting the pH of the pulp to 2 to 6 by means of an acid like e.g. aminic acid, sulphuric acid, hydrochloric acid;

b) feeding pulp to a first treatment tower (14, 112), so called acid tower,

c) treating the pulp in the acid tower (14, 112) at said pH, at a pressure of 0 to 20 bar, at a temperature of 75 to 130°C, for 20 to 240 minutes, for decreasing the kappa number by 1 - 9, usually 2 - 6 units,

d) discharging the pulp from said acid tower (14, 112) to a second treatment tower (24, 122) for a second treatment,

e) treating the pulp in said second tower with a complexing agent at a pH of 4 to 9, preferably 5 to 6, or with an oxidizing chemical such as chlorine dioxide, Caro's acid, peracids, or the like, and

f) washing and/or pressing the pulp.

2. A method according to claim 1, **characterized** in that the pulp is treated with a complexing agent either in phase e) with an acidifying chemical or in a separate phase between phases e) and f).

3. A method according to claim 1, **characterized** in that in phase g), after phase f), the pulp is bleached or treated in an alkaline stage where hydrogen peroxide is preferably used.

4. A method according to claim 1 or 2, **characterized** in that the pH of the pulp is adjusted, according to need, by adding acid or alkali to the pulp usually between phases c) and e), or in phase d).

5. A method according to claim 1 or 2, **characterized** in that magnesium and/or calcium and/or enzymes is added prior to the acidifying and/or chelating stage or in connection therewith.

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6. A method according to claim 1 or 3, **characterized** in that in phase f) the pulp is washed with a fractionating washer (28) so that filtrate F1 containing heavy metals is removed from the process and a cleaner filtrate F2 is recycled for use in some other stage of the process.

7. A method according to claim 3, **characterized** in that the peroxide bleaching of phase g) is effected in two towers (14, 24) which are different in size and connected to each other, the first being a so-called pretreatment reactor (14) and the second a so-called bleach tower (24).

8. A method according to claim 7, **characterized** by, in the peroxide bleaching stage
- mixing at least peroxide with the pulp,
- feeding the pulp into a pressurized pretreatment reactor (14) where the pressure is 3 to 20 bar and the retention time 10 to 60 min,
- allowing the pulp to react with peroxide,
- separating gas from the pulp,
- blowing the pulp by the pressure of pretreatment reactor (14) to the lower section of the bleach tower (24), wherefrom the pulp flows upwardly, and
- removing the pulp from the top of bleach tower (24).

9. A method according to claim 3 or 8, **characterized** in that the peroxide dosage to the bleaching stage is 5 to 20 kg/adt and the oxygen dosage 0 to 10 kg/adt, which, when oxygen is used, refers to an oxygen-reinforced peroxide stage $P_o$.

10. A method according to claim 3 or 8, **characterized** in that the peroxide dosage to the bleaching stage is below 10 kg/adt and the oxygen dosage over 5, preferably 5 to 15 kg/adt, which refers to a peroxide-reinforced oxygen stage $O_p$.

11. A method according to claim 7 or 8, **characterized** in that the pressure in the bleach tower is 0 to 5 bar, preferably 1.1 to 5 bar, and the temperature 80 to 130°C.

12. A bleaching sequence according to claim 3, **characterized** in that the bleaching sequence comprises two bleaching stages (P) using peroxide, the first in sequence being

is a peroxide-reinforced oxygen stage $O_p$ and the second an oxygen-reinforced peroxide stage $P_o$, whereby the peroxide dosage to stage $P_o$ is 10 to 20 kg/adt and the oxygen dosage 0 to 10 kg/adt, and the peroxide dosage to stage $O_p$ is below 10 kg/adt and the oxygen dosage over 5, preferably 5 to 15 kg/adt.

13. A bleaching sequence according to claim 1, **characterized** in that by using chlorine dioxide, its dosage to phase e) is 5 to 30 kg $ClO_2$/adt calculated as active chlorine.

14. A process for bleaching the pulp into an ISO brightness of over 80 using the method of claim 1, 3 or 8 in a bleaching sequence Cooking - O - AQ - P, Cooking - O - AD - P, Cooking O - ADQ - P, Cooking - O - $AP_s$ - P, or Cooking - O - $AP_sQ$ - P.

15. A process for bleaching the pulp into an ISO brightness of over 88 using the method of claim 1 or 6 in a bleaching sequence Cooking - O - AQ - $P_sQ$ - P.

16. A method according to claim 1, **characterized** in that step c) is performed at a pressure of 1 to 10 bar.

17. A method according to claim 1, **characterized** in that step c) is performed at a pH of 3 to 4.

18. A method according to claim 1, **characterized** in that step c) is performed at a temperature of 80 to 110°C.

19. A method according to claim 1, **characterized** in that step c) is performed at a time of 45 to 150 minutes.